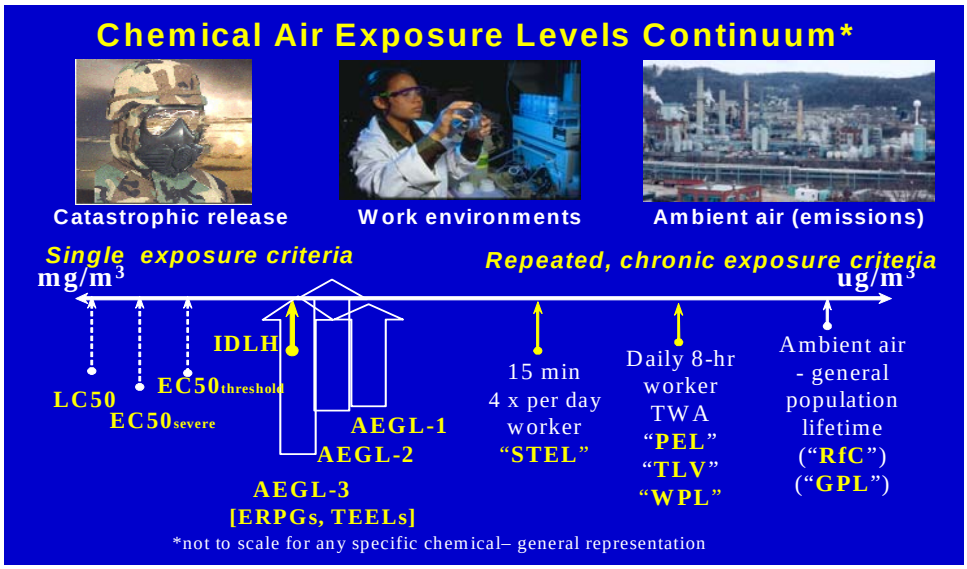
Basic Facts Regarding
Chemical Exposure Standards and Guidelines

Chemicals do not have a single 'safe level.' Every chemical has multiple health-based concentration standards, limits, and guidelines – the concentrations will vary depending on the duration and frequency which people may be exposed, as well as the level of risk acceptance, which will depend on the situation. In addition – different standards and guidelines are designed for air, water, soil, and even other sources such as food.

Health organizations (such as the US EPA, CDC, OSHA/NIOSH, FDA, as well as military health organizations) develop specific exposure concentration levels for a variety of applications. When assessing or preventing health risks associated with chemicals, it is important that the most appropriate health-based chemicals standards/guidelines are used for comparison. The Figure shows a generic example of the range of the types of airborne exposure standards and guidelines developed by various organizations for different applications:



ACRONYMS and ABBREVIATIONS:

US EPA	United States Environmental Protection Agency
CDC	Center for Disease Control and Prevention
OSHA	Occupational Safety and Health Agency
NIOSH	National Institute for Occupational Safety and Health
FDA	Food and Drug Administration
WHO	World Health Organization
NRC	National Research Council
mg/m^3	milligram chemical per cubic meter of air [= one part per million (ppm) = 1/1,000,000
ug/m^3	microgram chemical per cubic meter of air [= one part per million (ppb)] = 1/1,000,000,000
LC50	for military casualty prediction, Lethal Concentration-50% = concentration at which 1/2 of an exposed group are expected to die
LC01	for military casualty prediction Lethal Concentration-1% = concentration at which 1% of an exposed group are expected to die
EC50	for military casualty prediction, Effective Concentration-50% for (Severe) or (Mild/Threshold) effects = concentration at which 1/2 of an exposed group would be expected to have symptoms of designated severity
IDLH	Immediately Dangerous to Life and Health = occupational use, 30 minute standard used as criteria for donning full protective gear
AEGL	Acute Exposure Guidelines Levels - for civilian emergencies; multiple durations 10 min, 30 min, 1 hr, 4 hr, 8 hr; published by NRC AEGL 1- initial level above which of discomfort (minor transient effects) may begin to be noted AEGL 2 –level above which effects may begin to be more significant, begin to impair normal activities AEGL-3 - level above which effects may begin to be very severe
ERPGs	Emergency Response Planning Guidelines –AEGLs to supersede; also Levels 1, 2, 3, for civilian emergencies; only for 1 hr
TEELs	Temporary Emergency Exposure Levels – for emergencies – when AEGLs/ERPGs not available
STEL	Short-Term Exposure Limit –occupational use; a 15 min 'ceiling' level to ensure peak exposures maintain safe conditions
WPL	Worker Population Limit – a military term used for chemical warfare agents; represents standards similar to a TLV (see below)
TLV©	Threshold Limit Value – an 8-hr time weighted average developed by the ACGIH used in occupational settings to ensure continuous safe conditions; NIOSH and OSHA use these or have values called "Permissible Exposure Limits" (PELs)
GPL	General Population Limit - a term used for chronic protection levels developed by CDC for Army for chemical warfare agents; represents criteria similar to adjusted RfC (see below)
RfC	Reference concentration – estimated concentration that could be breathed in continuously every day for a lifetime without adverse effects (primarily used in environmental health risk assessments, developed by EPA (many found in IRIS website/database)

For additional information contact 410-410-1010